The Curse of the Kandu Archetype

Jim Weigand

2 March 2004

DMG Restoration Meeting

Barstow, California

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Or….

Cutting Cost, Improving Success, & Monitoring for Desert Restoration

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Wilfredo Pareto

(1848-1923)

Italian

Economist and Sociologist

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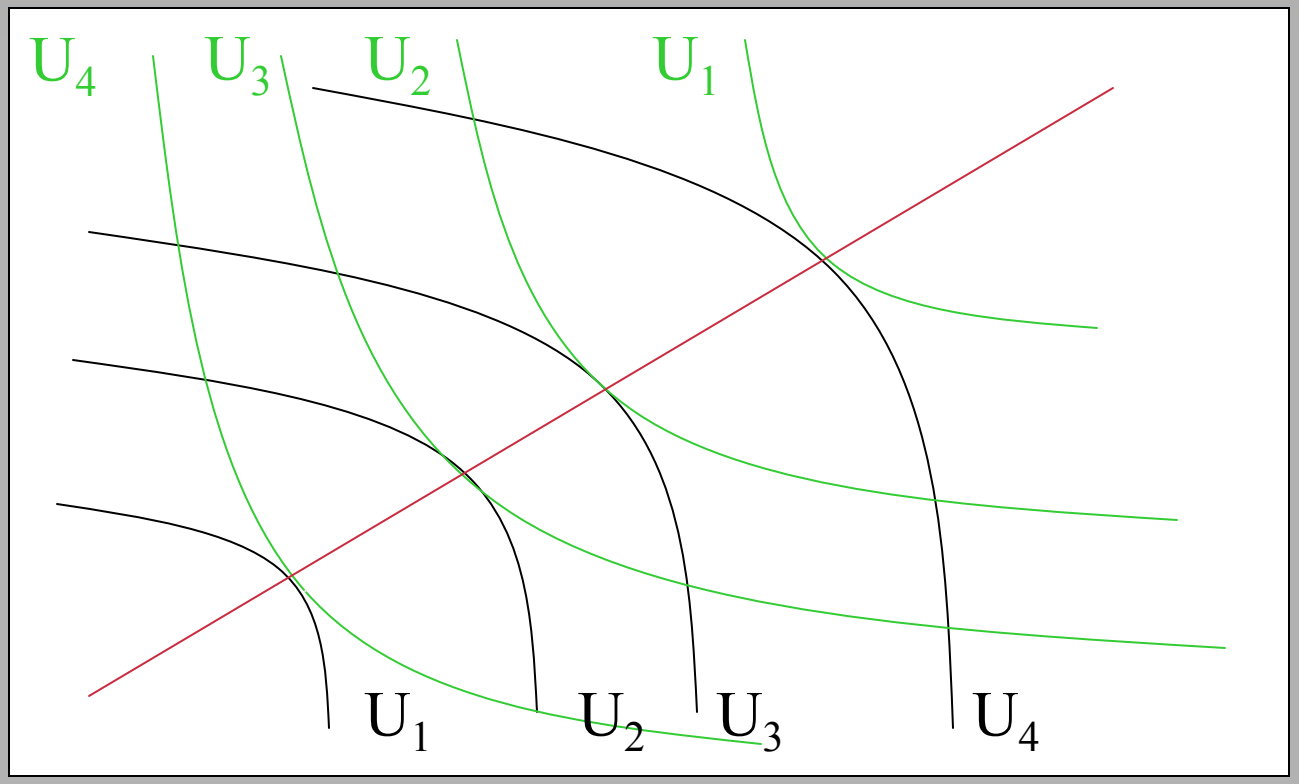
Pareto Efficiency

max_m miles of maintained trails 0_m



0_a restored desert acres max_a

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Joseph Juran

(1904 -)

Transylvanian – American

Economist &
Business Management
Theorist

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Efficient Use of Scarce Resources

Labor

Products

Risk Mgmt

Quality Control

Quality Improvement

Quality Planning

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Product Quality

for Interest Groups

Enviros: Improved Wildlife Habitat Conditions More Rapidly

OHV: Improved Trail Conditions

Interaction: Fewer Erosive Effects

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BLM Quality Model

for Desert Restoration

Labor	Competitive Contracting
Products	Tech Research for Restoration & Repair
Risk Mgmt	Monitoring, Bayesian Decision Theory

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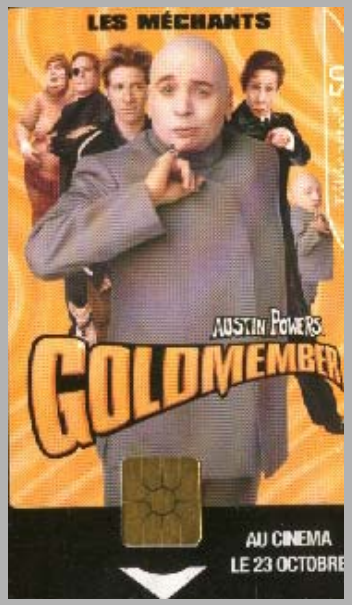
The Pareto Principle



Gold(en 80:20 Rule to Re)Member

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The Pareto Principle

The law of the many trivial and the important few.

80% of the potential benefit comes from 20% of the effort.

The 80:20 Rule

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Pareto Corollaries

- 80 % of the issues in decisions that really matter are political and social.
- Technical expertise helps little if one ignores politics & social issues.

Heresy

Bureau of Reclamation

Decision Guidebook

"How to get things done"

Source:

http://www.usbr.gov/pmts/guide/

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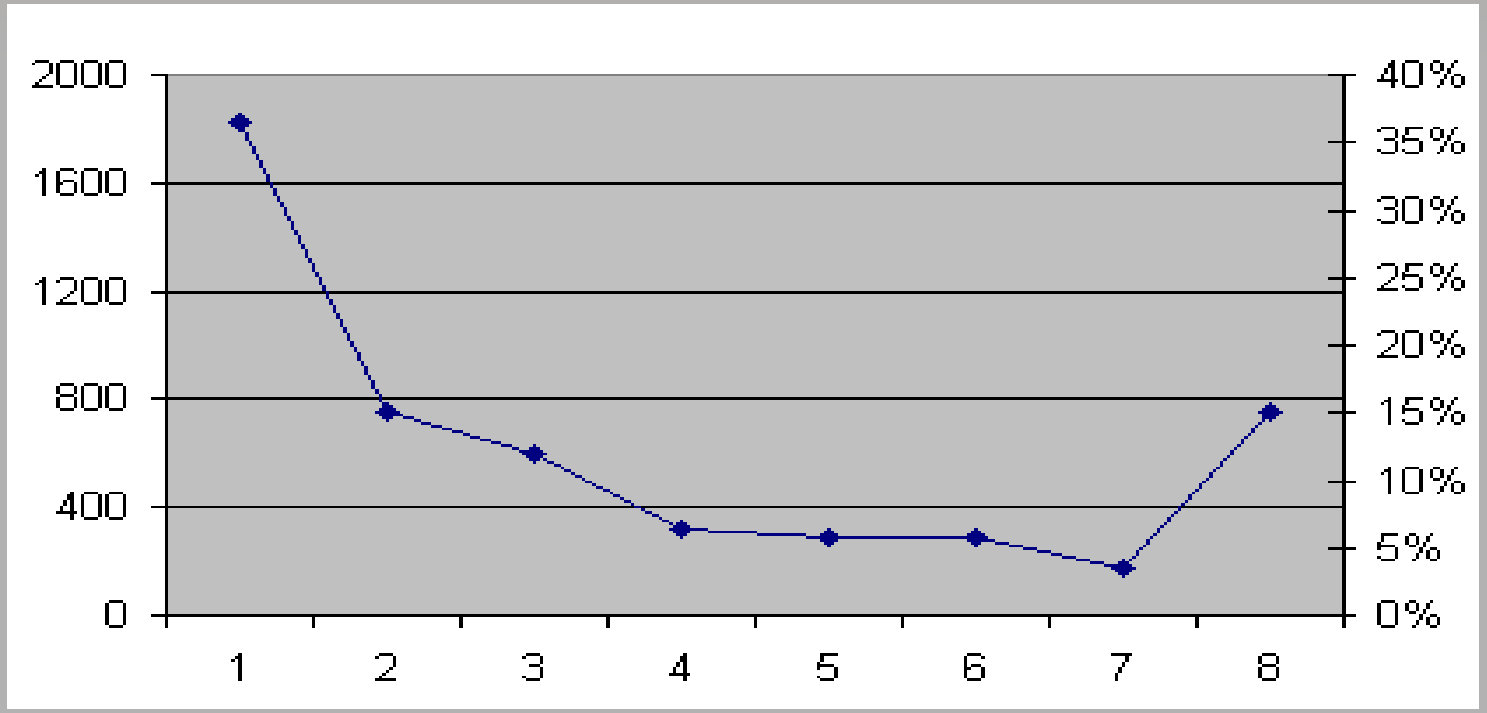
Applications of Corollaries



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Applications of Corollaries

BLM has adopted the Pareto Principal **ecologically**:

Restore landscapes most visible to the public.

Camouflage unauthorized trails where human temptation to transgress is greatest.

Focus on sites of greatest or most fragile biological diversity.

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Project Management

Walter Shewhardt (1891-1967)

W. Edwards Deming (1900 -1993)

Statistical Control

"A phenomenon will be said to be controlled, when through the use of past experience, we can predict, at least within limits, how the phenomenon may be expected to behave in the future."

Goal: Minimize Statistical Variance

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Project Management

Good Design

Restoration Prescriptions

Restoration Experiments

Result: Improve pace and quality of restoration

Statistical Control

Monitoring

Institutional Memory

Result: BLM makes continuous improvements.

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Project Management

Ecological Obstacles

Absence of Soil Surveys
Soil Texture – Plant Community Relations
High Inter-Annual Variation in Rainfall
Species Autoecology
Subsoil Ecology

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Project Management

Organizational Challenges

Local Autonomy vs. Ecoregion Policy
Conservation of Local Knowledge
Commitment to Monitoring
Tech Transfer and Training
High Staff Turnover
Project Planning

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Project Management for Research

- Formulate Restoration Hypotheses Clearly
- Design Restoration Experiments to Test Hypotheses
- Conduct Restoration Experiments
- Analyze and Interpret Results for Hypotheses
- Share Findings with Colleagues and the Public

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The Curse of the Kandu Archetype

READY	Write that Grant Application NOW
	Get that Money
FIRE	Spend that Money
	Put Projects on the Ground
	Lead Dog-and-Pony Shows
AIM	Reflection about Needed Knowledge Oops! Where is the Benchmark or Baseline?

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The Curse of the Kandu Archetype

Symptom: Multiple restoration efforts that do not meet targets and result in surprises to management

Cause: Inadequate technology, training, monitoring, and analysis for restoration projects undertaken

Cures for the Curse

INFORMATION GENERATION AND ORGANIZATION

Meta-Replication: Replicate Restoration Studies in different years, at different sites, with different investigators.

POLICY FORMULATION

An Overall Design, Common to DMG Member Agencies, for Testing Desert Restoration to Arrive at Robust Conclusions

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Bayesian Hypothesis Testing and Decision Theory

Monitor at Pre-Established Times After the Restoration Prescription is Completed

Meta-Analysis: Reassess the Status of Regenerating Vegetation

Use Bayes Factors - Variables of Critical Importance to Policy and Management

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Bayesian Hypothesis Testing and Decision Theory

Establish Thresholds of Success and Failure at Milestones for Key Factors

Shrub Cover ≥ 30%	**No New Action**
Shrub Cover ≤ 20%	**New Response Rx**
20 % < Shrub Cover < 30%	**Gray Zone of Risk**

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Recap

Failure is when you make the same mistake twice.

- Take the Time to Write Detailed Restoration Projects
- Account for the Behavior of People in Your Plan
- Strive for Quality in a Competitive Restoration Market
- Build a Mechanism for Learning and Adapting

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Remember

Monetary rewards are not a substitute for intrinsic motivation.

W. Edwards Deming

Why We Restore

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